



# ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

## SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-G3 BYPASS RATIO: 9.1  
 UNIQUE ID NUMBER: 19RR088 PRESSURE RATIO ( $\pi_{00}$ ): 44.5  
 COMBUSTOR: Phase5 Tiled  
 ENGINE TYPE: TF RATED THRUST ( $F_{00}$ ) (kN): 323.7

REGULATORY DATA **\*\* DATA SUPERSEDED \*\*** SEE FOLLOWING UID FOR REVISED DATA: **01P19RR109**

CHARACTERISTIC VALUE:	HC	CO	NO <sub>x</sub>	SMOKE NUMBER
D <sub>p</sub> /F <sub>00</sub> (g/kN) or SN	0.0	9.1	62.3	16.4
AS % OF ORIGINAL LIMIT	0.0	7.7	48.3	95.5
AS % OF CAEP/2 LIMIT (NO <sub>x</sub> )			60.4	
AS % OF CAEP/4 LIMIT (NO <sub>x</sub> )			64.9	
AS % OF CAEP/6 LIMIT (NO <sub>x</sub> )			70.8	
AS % OF CAEP/8 LIMIT (NO <sub>x</sub> )			78.7	

### DATA STATUS

- PRE-REGULATION  
 x CERTIFICATION  
 - REVISED (SEE REMARKS)

### TEST ENGINE STATUS

- NEWLY MANUFACTURED ENGINES  
 x DEDICATED ENGINES TO PRODUCTION STANDARD  
 - OTHER (SEE REMARKS)

### EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE  
 (ANNEX 16 VOLUME II)

### CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)  
 - OUT OF PRODUCTION (DATE: - )  
 - OUT OF SERVICE (DATE: - )

### MEASURED DATA

MODE	POWER SETTING (%F <sub>00</sub> )	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO <sub>x</sub>	
TAKE-OFF	100	0.7	2.395	0.00	0.42	49.25	9.0
CLIMB OUT	85	2.2	1.966	0.00	0.45	38.14	12.3
APPROACH	30	4.0	0.647	0.00	0.70	13.81	8.2
IDLE	7	26.0	0.245	0.00	6.54	6.04	1.9
LTO TOTAL FUEL (kg) or EMISSIONS (g)			897	0	2761	19303	-
NUMBER OF ENGINES				5	5	5	6
NUMBER OF TESTS				11	11	11	8
AVERAGE D <sub>p</sub> /F <sub>00</sub> (g/kN) or AVERAGE SN (MAX)				0.0	8.5	59.6	15.3
SIGMA (D <sub>p</sub> /F <sub>00</sub> in g/kN, or SN)				0.0	2.0	0.9	1.7
RANGE (D <sub>p</sub> /F <sub>00</sub> in g/kN, or SN)				0.0	5.56-10.72	58.59-60.48	12.1-16.8

### ACCESSORY LOADS

POWER EXTRACTION 0 (kW) AT - POWER SETTINGS  
 STAGE BLEED 0 (% CORE FLOW) AT - POWER SETTINGS

### ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.9-102.1
TEMPERATURE (K)	275-304.6
ABS HUMIDITY (kg/kg)	0.00308-0.01935

### FUEL

SPEC	
H/C	1.91
AROM (%)	17.2

MANUFACTURER: Rolls-Royce plc  
 TEST ORGANIZATION: Rolls-Royce  
 TEST LOCATION: Derby  
 TEST DATES: 24/09/2009-30/11/2017

### NO<sub>x</sub> REGULATION PARAGRAPH

	2.3.2 c) (CAEP/4)
	2.3.2 d) (CAEP/6)
x	2.3.2 e) (CAEP/8)

### REMARKS

- Data from Certification Report EDNS01000615769
- Certification in accordance with Part III, Chapter 2, of Amendment 8 of ICAO Annex 16 Vol. II.
- NO<sub>x</sub> levels in accordance with Part III, Chapter 2, 2.3.2 e) (CAEP/8)

Compliance with Fuel Venting requirements: x ('x' if complies, 'PR' if pre-regulation, '-' if information is not available)